

The invention claimed is:

1. A vehicle suspension assembly, comprising:

a first control arm having a first end and a second end, wherein the first end of the first control arm is adapted to be pivotally coupled to a first frame member of a vehicle, and wherein the second end of the first control arm is adapted to be pivotally coupled to an axle of the vehicle;

a second control arm having a first end and a second end, wherein the first end of the second control arm is adapted to be pivotally coupled to a second frame member of the vehicle, and wherein the second end of the second control arm is adapted to be pivotally coupled to the axle of the vehicle;

a rigid first torsional member coupled to the first control arm along a length of the first control arm, and coupled to the second control arm along a length of the second control arm; and

a third control arm having a first end and a second end, wherein the first end of the third control arm is adapted to be pivotally coupled to a third frame member of the vehicle, and wherein the second end of the third control arm is adapted to be pivotally coupled to at least a select one of the second frame members and the axle of the vehicle.

2. The vehicle suspension assembly of claim 1, wherein the first torsional member is fixedly coupled to the first control arm proximate the first end of the first control arm, and wherein the torsional member is fixedly coupled to the second control arm proximate the first end of the second control arm.

3. The vehicle suspension assembly of claim 1, wherein the first torsional member is tube-shaped.

4. The vehicle suspension assembly of claim 1, wherein the first end of the first control arm is adapted to be pivotally coupled with a first linkage member that is fixedly attached to and extends downwardly from the first frame member.

5. The vehicle suspension assembly of claim 4, wherein the first end of the second control arm is adapted to be pivotally coupled with a second linkage member that is fixedly attached to and extends downwardly from the second frame member.

6. The vehicle suspension assembly of claim 5, wherein the second end of the third control arm is adapted to be pivotally coupled with a third linkage member that is fixedly attached to and extends upwardly from the axle.

7. The vehicle suspension assembly of claim 1, wherein the first and second end of the first control arm and the first and second end of the second control arm each include an elastically deformable bushing.

8. The vehicle suspension assembly of claim 7, wherein the bushings of the first and second ends of the first, second and third control arms each have an aperture extending therethrough, and wherein each aperture is elongated.

9. The vehicle suspension assembly of claim 7, wherein the first and second end of the third control arm each include an elastically deformable bushing.

10. The vehicle suspension assembly of claim 1, wherein the first torsional member includes a first flanged end and a second flanged end, and the first flanged end is fixedly coupled to the first control arm via at least one bolt extending through at least one aperture in the first flanged end and at least one aperture in the first control arm, and wherein the second flanged end is fixedly coupled to the second control arm via at least one bolt extending through at least one aperture in the second flanged end and at least one aperture in the second control arm.

11. The vehicle suspension assembly of claim 1, further including:

a first pneumatic suspension bag adapted to be positioned between the first frame member and the axle; and

a second pneumatic suspension bag adapted to be positioned between the second frame member and the axle.

12. The vehicle suspension assembly of claim 11, further including:

a third pneumatic suspension bag positioned between the first frame member and the axle; and

a fourth pneumatic suspension bag positioned between the second frame member and the axle.

13. The vehicle suspension assembly of claim 1, further including:

a fourth control arm having a first end and a second end, wherein the first end of the fourth control arm is adapted to be pivotally coupled to the third frame member of the vehicle, and wherein the second end of the fourth control arm is adapted to be pivotally coupled to the axle of the vehicle.

14. The vehicle suspension assembly of claim 13, further including:

a rigid second torsional member fixedly attached to the third control arm along a length of the third control arm, and fixedly attached to the fourth control arm along a length of the fourth control arm.

15. The vehicle suspension assembly of claim 1, wherein the first and the second control arms are each substantially L-shaped defining an elbow along the length of each of the control arms.

16. The vehicle suspension assembly of claim 15, wherein the first torsional member is fixedly coupled to the first and second control arms proximate the elbows thereof.

17. The vehicle suspension assembly of claim 1, wherein the second end of the first control arm and the second end of the second control arm are each substantially fork-shaped.

18. The vehicle suspension assembly of claim 1, wherein the torsional member is pivotably coupled to the first control arm, and wherein the first torsional member is pivotably coupled to the second control arm.

19. The vehicle suspension assembly of claim 18, wherein the first torsional member is pivotable with respect to the first and second control arms in a substantially vertical direction.

20. The vehicle suspension assembly of claim 18, wherein the first torsional member is pivotable with respect to the first and second control arms in a substantially horizontal direction.

21. A vehicle suspension assembly, comprising:

a first control arm having a first end and a second end, wherein the first end of the first control arm is adapted to be pivotally coupled to a first frame member of a vehicle, and wherein the second end of the first control arm is adapted to be pivotally coupled to an axle of the vehicle;

a second control arm having a first end and a second end, wherein the first end of the second control arm is adapted to be pivotally coupled to the first frame member of the vehicle, and wherein the second end of the second control arm is adapted to be pivotally coupled to the axle of the vehicle;

a rigid first torsional member coupled to the first control arm along a length of the first control arm, and coupled to the second control arm along a length of the second control arm; and

a third control arm having a first end and a second end, wherein the first end of the third control arm is adapted to be pivotally coupled to a select one of the first frame member, a second frame member, and a third frame member of the vehicle, and wherein the second end of the third control arm is adapted to be pivotally coupled to the axle of the vehicle.

22. The vehicle suspension assembly of claim 21, wherein the third control arm is positioned between the first and second control arms, and wherein the third control arm is pivotably coupled with the first frame member.

23. The vehicle suspension assembly of claim 21, wherein the torsional member is tube-shaped.

24. The vehicle suspension assembly of claim 21, wherein the first end of the first control arm is adapted to be pivotally coupled with a first linkage member that is fixedly attached to and extends upwardly from the axle.

25. The vehicle suspension assembly of claim 24, wherein the first end of the second control arm is adapted to be pivotally coupled with a second linkage member that is fixedly attached to and extends upwardly from the axle.

26. The vehicle suspension assembly of claim 21, wherein the first and second end of the first control arm and the first and second end of the second control arm each include an elastically deformable bushing.

27. The vehicle suspension assembly of claim 26, wherein the first and second end of the third control arm each include an elastically deformable bushing.

28. The vehicle suspension assembly of claim 21, wherein the first end of the third control arm is adapted to be pivotably coupled to the second frame member, and further including:

a fourth control arm having a first end and a second end, wherein the first end of the fourth control arm is adapted to be pivotally coupled to the third frame member of the vehicle, and wherein the second end of the fourth control arm is adapted to be pivotally coupled to the axle of the vehicle.

29. The vehicle suspension assembly of claim 21, wherein the torsional member is pivotably coupled to the first control arm, and wherein the first torsional member is pivotably coupled to the second control arm.

30. The vehicle suspension assembly of claim 29, wherein the first torsional member is pivotable with respect to the first and second control arms in a substantially vertical direction.

31. The vehicle suspension assembly of claim 30, wherein the first torsional member is pivotable with respect to the first and second control arms in a substantially horizontal direction.